'BROKK' performs smashingly

by Leslie Foster
for the Star

Ask someone at Test Area North for directions to PREPP, and the conversation might sound something like this:

"Can you tell me where the PREPP facility is?"

"The PREPP facility?"

"Yes, that's the Process Experimental Pilot Plant."

"Do you know the building number? I've never heard of it."

Ask at Central Facilities Area about STF or STP, and you're likely to have a similar conversation.What's different about these buildings that makes so few people aware of their existence?

The biggest difference between these and other INEEL facilities is that no one uses them any more. They're part of the Decontamination and Decommissioning Program (D&D), so they are in the process of being cleaned out and dismantled.

Yet it's at these facilities that some exciting technologies operate. Take, for instance, the BROKK BM 250 demolition robot. It's only about the size of a small truck, but, according to estimates by Jeff Allen, job site supervisor at STF, it can do more work in one

Using a radio remote control, the BROKK operator can stand up to 400 feet from the work area, safely removed from the dangers of falling pipes, concrete or other rubble from demolition. Here, Bret Hillman uses the BROKK to tear out piping in the Security Training Facility.

The BROKK robot is about the size of a small truck and can often do more work in an hour than a crew of five can complete in a day.

hour than a crew of five workers could complete in a day.

At the Security Training Facility (STF—perhaps better known as the Experimental Organic Cooled Reactor), the BROKK has been used to shear conduit piping that covered an entire wall.

Allen estimates that doing the job without the BROKK would have taken 10 times as long. The BROKK also hammered two holes in the basement floor of the same building for creating negative air during asbestos cleanup in the sub-basement.

Allen says this piece of work would have been difficult, perhaps impossible, without the BROKK. A jackhammer wouldn’t have been equal to the task because, while the floor was constructed of concrete, it included metal plating that a jackhammer couldn’t penetrate.

Cutting torches could have been used on the metal plates if they’d been made of carbon steel, but they were constructed of cast iron, a material beyond the capabilities of a cutting torch. But the BROKK made the holes in a matter of about 45 minutes.

The BROKK is becoming an indispensable tool on demolition projects. “It’s the only way to go,” says Morris Torres, a technician. “The BROKK does more work than any one person could do, just in a couple hours.”

Not only is the BROKK faster than manual tools like jackhammers and band saws, but it

also is much improved in safety.

Using a radio remote control, the robot operator can stand at a distance of 400 feet from the work area, where he or she is removed from the dangers of falling pipes, concrete or other rubble from demolition.

In addition, the BROKK works continuously, something workers can’t do without risk to their health. And it can work efficiently in areas where high temperatures would cause serious heat stress situations for people.

Operating this remote device isn’t as hard on workers as a jackhammer, for example, because the operator holds only the remote control — no heavy, vibrating equipment.

Another virtue of the BROKK is its versatility. It consists of four hydraulic outriggers, which stabilize it while it works; wheels, which mobilize the robot; and a body with a rotating base on top.

Extending from the base, which is capable of continuous 360-degree rotation, is a hydraulic boom (or arm) that reaches 15 feet. The end of the arm is where the versatility begins. Several tool-head attachments — called end effectors — can be hooked to the quick hitch in about 10 minutes.

Operators can choose a hammer, shear, crusher with shear, grapple, scabbler, or loader bucket (that can be used for digging). With this variety of attachments, the BROKK can complete nearly an entire demolition job unassisted.

Much of the credit for the BROKK’s versatility goes to the workers. Tom Thiel, D&D project manager, puts it this way: “Every time we go to use it, we find new uses.”

One innovative operator found that he could use the shear attachment to grip pipes on a wall; then, by rotating the tool head, he could pull the pipes away from the wall’s surface so he could cut them more easily.

Employees are working on modifying the scabbler attachment to reduce dust problems. In the meantime, one welder has created a bracket that connects a Pentek hand scabbler, which is already set up to reduce dust, to the BROKK.

Operators and project managers are making many favorable comments about the BROKK robot. Says Thiel, “The BROKK should greatly improve the efficiency of the D&D crew as well as enhance safety on the job.” To those who use it, the BROKK is a major improvement over conventional dismantling methods.

Dick Meservey and Ann Marie Smith are leaders of the Accelerated Site Technology Deployment Integrated Decontamination and Decommissioning (ASTD ID&D) Project. They, along with other project members Julie Tripp, Esther McNeal and Leslie Foster, have worked with the D&D Operations group, managed by Brad Frazee, to discover and document the benefits of the BROKK. They’ve found that it

accelerates schedules, reduces costs, improves safety and decreases radiation exposure on many D&D projects, and it’s become a popular tool at the INEEL.

The BROKK is only one of many innovative technologies being implemented in the decontamination and decommissioning of facilities across the Department of Energy complex as part of the ASTD ID&D Project.

For more information about these newly deployed technologies, contact Dick Meservey, 526-1834, or Ann Marie Smith, 526-687.

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